Amendments to the Claims:

Please amend claims 93, 94, and 95 as indicated in the Listing of Claims.

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

22. (Previously Presented): The construct of claim 93, wherein the reporter gene encodes a fluorescent protein.

26. (Previously Presented): The plasmid of claim 94 that is an expression vector.

93. (Currently Amended): A construct comprising an isolated nucleic acid molecule operatively linked to a reporter gene, wherein the nucleic acid molecule comprises a sequence of nucleotides selected from the group consisting of:

a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that encodes the sequence of amino acids encoded by the complement of the sequence of nucleotides set forth in SEQ ID No. 3; and

b) a sequence of nucleotides that is the complement of a sequence of nucleotides set forth in SEQ ID No. 3 and that encodes a *Caenorhabditis* LOV-1 protein, or complement thereof;

~~c) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that is fully complementary to at least one of the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and~~

~~d) a sequence of nucleotides degenerate with the sequence of nucleotides of c)~~.

94. (Currently Amended): A plasmid comprising an isolated nucleic acid molecule comprising a sequence of nucleotides selected from the group consisting of:

a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that encodes the sequence of amino acids encoded by the complement of the sequence of nucleotides set forth in SEQ ID No. 3; and

b) a sequence of nucleotides that is the complement of a sequence of nucleotides set forth in SEQ ID No. 3 and that encodes a *Caenorhabditis* LOV-1 protein, or complement thereof;

~~c) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that is fully complementary to at least one of the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and~~

~~d) a sequence of nucleotides degenerate with the sequence of nucleotides of c)~~.

95. (Currently Amended): An isolated nucleic acid molecule that encodes a mutant *Caenorhabditis* LOV-1 protein comprising a sequence of nucleotides, or complement thereof, that encodes the sequence of amino acids set forth in SEQ ID NO. 15, wherein:

a *Caenorhabditis elegans* nematode expressing the mutant protein exhibits defective mating behavior; and

a nematode that expresses such defect exhibits one or both of an altered location of vulva (Lov) and response phenotype~~; and~~

~~a wild-type LOV-1 protein is encoded by the nucleic acid molecule consisting of:~~

~~a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that encodes the sequence of amino acids encoded by the complement of the sequence of nucleotides set forth in SEQ ID No. 3; and~~

~~b) a sequence of nucleotides that is the complement of a sequence of nucleotides set forth in SEQ ID No. 3 and that encodes a *Caenorhabditis* LOV-1 protein, or complement thereof;~~

~~c) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that is fully complementary to at least one of the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and~~

~~d) a sequence of nucleotides degenerate with the sequence of nucleotides of c)~~.

96. (New): A plasmid comprising an isolated nucleic acid molecule comprising a sequence of nucleotides selected from the group consisting of:

a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that is fully complementary to at least one of the exons set forth in SEQ ID No. 3, that hybridizes to the nucleotide sequence of SEQ ID NO:3 under conditions of high stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein rescues a sy552 mutant by exhibiting normal location of vulva and normal response male nematode sensory behaviors, and wherein the sequence encodes a transmembrane protein having a serine-threonine rich extracellular domain; and

b) a sequence of nucleotides degenerate with the sequence of nucleotides of a).

97. (New): The plasmid of claim 96, wherein the sequence comprises nucleotides 2267-1209 of SEQ ID NO:3.